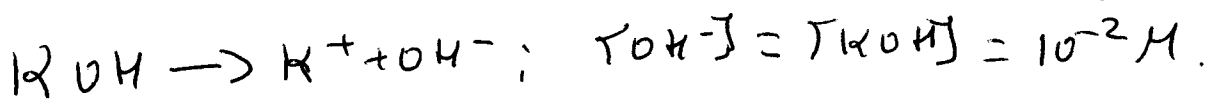


2.8.

(15) a) $pH = 12 \Rightarrow [H^+] = 10^{-12} \Rightarrow [OH^-] = \frac{10^{-14}}{10^{-12}} = 10^{-2} M$.

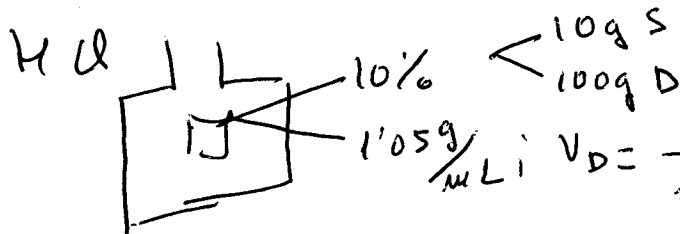


$10^{-2} = \frac{m_s}{0.25}$; $m_s = 2.5 \cdot 10^{-3} \text{ moles}$

$2.5 \cdot 10^{-3} \text{ moles KOH} \times \frac{56 g}{1 \text{ mol}} \times \frac{1000 \text{ mg}}{1 g} = 140 \text{ mg}$

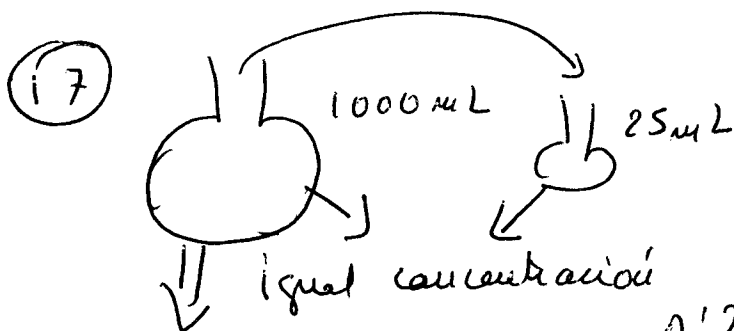
b) Neutralización $\Rightarrow V_a \cdot M_a \cdot \text{val} = V_b \cdot M_b \cdot \text{val}$.

Calculamos la $[HCl]$.



$M = \frac{\frac{10}{36.5}}{0.095 L} = 2.9 M$.

$V_a \cdot 2.9 \cdot 1 = 250 \cdot 10^{-2} \cdot 1$; $V_a = 0.86 \text{ mL}$.



Neutralización: $V_a \cdot M_a \cdot \text{val} = V_b \cdot M_b \cdot \text{val}$

$50 \cdot 0.1 \cdot 1 = 25 \cdot V_b \cdot 1$

$V_b = 0.2 M$.

$[NaOH] = 0.2 M$.

$0.2 M = \frac{m_s}{1 L}$; $m_s = 0.2 \text{ moles NaOH}$.

$0.2 \text{ mole NaOH} \times \frac{40 g}{1 \text{ mol}} = 8 g \text{ NaOH puro}$; $\frac{8}{10} \times 100 = 80\% \text{ riqueza}$

(19) a) Se hará en el laboratorio.

b) $V_a = 50 \text{ mL}$

$M_b = 0.05$

$V_b = 17.4 \text{ mL}$

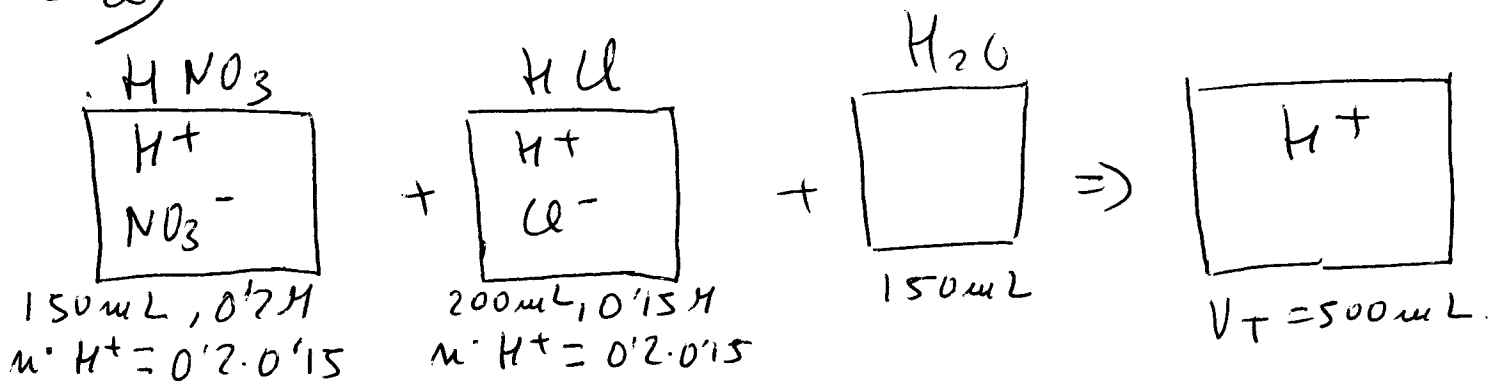
$V_a \cdot M_a \cdot \text{val} = V_b \cdot M_b \cdot \text{val}$

$50 \cdot M_a \cdot 1 = 0.05 \cdot 17.4 \cdot 1$

$M_a = 0.0174 M$.

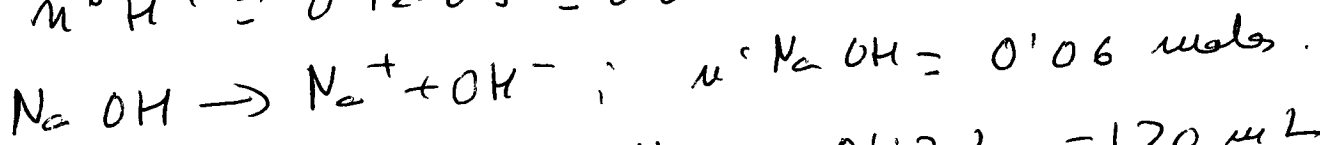
$\frac{0.0174 \text{ mol}}{1 L} \times \frac{36.5 g}{1 \text{ mol}} = 0.63 \frac{g}{L}$

(21) a)



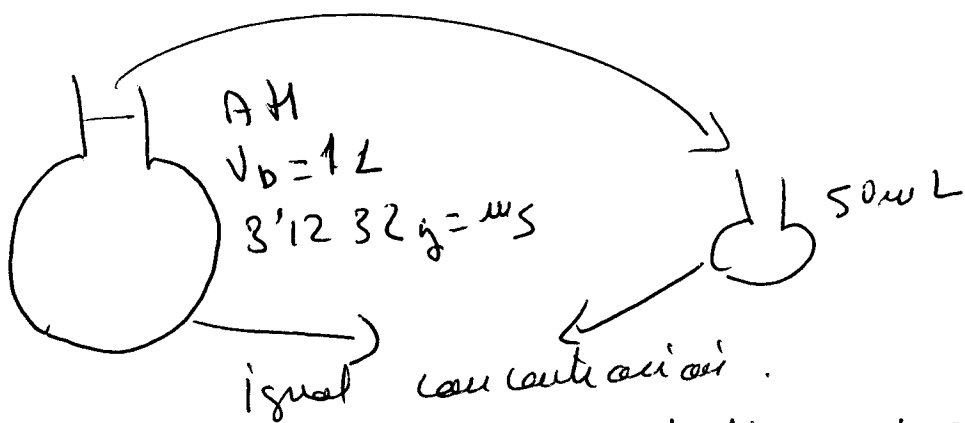
$$[\text{H}^+] = \frac{0.2 \cdot 0.15 + 0.2 \cdot 0.15}{0.5} = \frac{0.06}{0.5} = 0.12 \text{ M}; \text{ pH} = \underline{\underline{0.92}}$$

b) Neutralization $\Rightarrow n^{\circ} \text{H}^+ = n^{\circ} \text{OH}^-$
 $n^{\circ} \text{H}^+ = 0.12 \cdot 0.5 = 0.06 \xrightarrow{\text{Neutralization}} n^{\circ} \text{OH}^- = 0.06$



$$0.05 = \frac{0.06}{V_D}; \quad V_D = \underline{\underline{0.12 \text{ L}}} = \underline{\underline{120 \text{ mL}}}$$

(23)

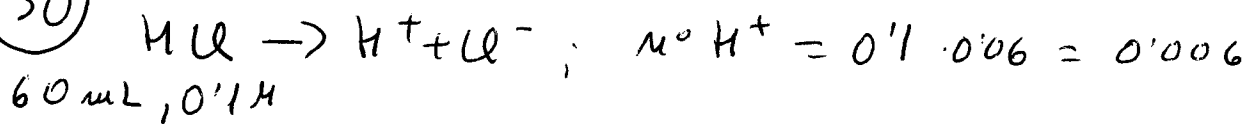


P. de equivalência \Leftrightarrow Neutralização $\Rightarrow V_A \cdot M_A \cdot \text{val} = V_B \cdot M_B \cdot \text{val}$

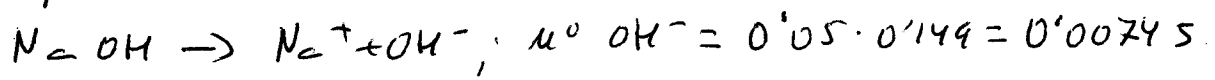
$$50 \cdot M_A \cdot 1 = 25.6 \cdot 0.05 \cdot 1; \quad M_A = 0.0256 \text{ M}$$

$$0.0256 = \frac{\frac{3.1232}{P_m}}{12}; \quad P_m = 122 \frac{\text{g}}{\text{mol}}$$

(30)



60 mL, 0'1 M



149 mL, 0'05

$V_T = 209 \text{ mL}$; Subtray OH^- ; $n^{\circ} OH^- = 0'00745 - 0'006 =$
 \downarrow
 quedan n° neutra | $= 0'00145 \text{ mols}$.
 ligan.

$$[OH^-] = \frac{0'00145}{0'209} = 6'9 \cdot 10^{-3}; pOH = 2'16; \underline{\underline{pH = 11'84}}$$